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Centennial Engineering, Inc.
15000 West 64th Avenue
Arvada, Colorado 80001

STAPLETON INTERNATIONAL AIRPORT

*

GROUND WATER MONITORING

*

SOUTHERN TIER OF ROCKY MOUNTAIN ARSENAL

1985-1986

Blatchley Associates, Inc.
2525 South Wadsworth Blvd., #306
Denver, Colorado 80227

February 1987

Chapter 1

INTRODUCTION

Stapleton International Airport is located in the northeast portion of the City of Denver, Colorado, and adjoins the southwestern extent of the Rocky Mountain Arsenal (Figure 1). Expansion of the existing runway facilities has been proposed to alleviate flight congestion problems until the construction of a new airport is completed. The new airport, which is proposed to be located northeast of the current airport, is envisioned to be operational about 1995.

Currently, airport expansion plans may involve the construction of a new temporary east-west runway facility located on the southern tier of the Rocky Mountain Arsenal. The property contemplated for construction is located in Sections 11 and 12, Township 3 South, Range 67 West and Sections 7 and 8, Township 3 South, Range 66 West. After the initial investigation, the 9.5° Cant alignment has been selected for design and construction. The locations of the selected alignment is shown on Figure 3.

1.1 Purpose

The purpose of this investigation was to provide a summary of the alluvial (shallow) ground water monitoring beneath the project site, and to further identify any potential ground water problems areas in the vicnity of the selected runway alignment.

This report supplements the report "Ground Water Investigation-Southern Tier of Rocky Mountain Arsenal," Blatchley Associates, Inc., January 1986.

1.2 Scope of Work

This study included monitoring the ground water levels on the Southern Tier monthly for one year and bimonthly after the first year. The field work consisted of monitoring 61 new and existing water level test/monitor holes completed in the alluvial aquifer underlying the southern tier of the Rocky Mountain Arsenal. (See Figure 2)

The results of the investigations are presented in profile in Figure 3 showing the initial configuration of the alluvial ground water table and bedrock beneath the selected runway alignment (9.5° Cant). This data provides the basis for the conclusions and recommendations. Figure 3 also shows the approximate location of the selected runway alignment.

The potential effect of future suburban and commercial development on the alluvial ground water system underlying the project site is also addressed.

Chapter 2

CONCLUSIONS AND RECOMMENDATIONS

2.1 Conclusions

(1) The water table for the East-West Runway configuration, 9.5° Cant, does not present an immediate problem from the standpoint of having to dewater for the normal runway construction. Areas of the proposed runway alignment in which the water table is nearest to the surface are in areas where the fill for the runway will be most extensive. The construction and/or operation of structures under the runway may be affected by ground water depending on where the structures are located.

(2) It is concluded that the water table fluctuations are relatively stable; hence, the bimonthly monitoring program should be discontinued for the present. Monitoring should be done on a semi-annual basis until the design and construction of the runway proceeds.

(3) The fluctuations in the water table are relatively minor over the period of the observation. Since the ground water investigations began, the greatest fluctuation in water levels occurs where the aquifer is the shallowest and is minimal where the aquifer is the deepest.

2.2 Recommendations

(1) It is recommended that the monitoring program be continued only on a semi-annual basis until the design and construction of the runway proceeds.

(2) It is recommended that when the field investigations for the design of the selected runway proceed, that observation holes be established only for Station 217+00 through Station 234+00 and Station 245+00 through Station 265+00. Once the water table has stabilized in the test holes, one or two readings should be sufficient to verify the water table location for construction purposes.

(3) The design of structures under the runway should take into account the potential of ground water interference in the construction and operational processes.

Chapter 3

MONITORING PROGRAM

3.1 Monitoring Procedures

The monitoring program established in June of 1985 has continued on a monthly basis, with the exception of November 1985, through the month of June 1986. Since June 1986 the monitoring has continued on a bimonthly basis through November of 1986. A total of 61 testing/monitoring holes were monitored. The 61 test/monitor holes include those established by others and those established in the drilling program the first half of 1985 as a result of the Stapleton International Airport investigations.

The monitoring of the water table was continued under the same safety procedures established at the beginning of the project.

All data readings were considered to be good with the exception of some of the readings in January 1986. The January 1986 readings, as shown later in this report on the water table charts, were obviously in error. The cause of the readings being in error may have been due to the malfunction of the electronic measuring device.

3.2 Results of the Monitoring Program

As shown on Figures 4 through 15, the water table fluctuations were quite minor with most fluctuations less than two

feet throughout the observation period. A summary of the water table elevations are given in Table 1.

Chapter 4

EVALUATION OF THE PROPOSED RUNWAY ALIGNMENT

4.1 Runway Selected

The East-West Runway selected for analysis is referred to as the East-West Runway Configuration, 9.5° Cant. as established by Centennial Engineering, Inc., February 1986. The approximate location of this Configuration is shown on Figure 3. The bedrock, ground water and ground surface along the center line of the main runway was evaluated and plotted in profile as shown on Figure 3. The plot of the water table was established by measurement in June of 1985. The maximum water table plotted occurred at various times during the past year and a half of observation. The water table on June 1985 is shown in plan in Figure 12, Existing Water Table Elevation, in the report "Stapleton International Airport, Ground Water Investigation on Southern Tier of Rocky Mountain Arsenal," Blatchley Associates, Inc., January 1986. In the same report, the Bedrock Contour Map, Figure 10, was utilized in determining the profile of the bedrock under the proposed runway. An independent evaluation of the maximum water table readings in each T/M hole was reduced to a water table contour map without regard to concurrent dates amongst the T/M holes. The maximum fluctuation from the June 1985 water levels is about zero to four feet. It should be noted that the greatest fluctuation in water table occurs where the aquifer is the shallowest.

4.2 East-West Parallel Taxiway Configuration

The taxiway which parallels the proposed runway configuration was not specifically investigated as to depths to ground water below the taxi surface. It should be noted that the ground surface is generally higher on the runway centerline and the ground water table would concurrently be slightly higher also. However, the differences were not considered to be significant and did not justify further consideration at this time. At the time the field investigations for the site specific design of the runway is made, the testing/monitoring program should include T/M holes to be drilled alternately between the runway and taxiway.

4.3 Construction of the Runway

At this time it does not appear that the water table will in any way cause construction problems because of the present depth of the water table. It is not known where drainage structures or other auxiliary features of the runway construction requiring deeper excavation than the foundations of the runway may be located and, hence, their contact with the water table and its capillary zone would not be known at this time. It is believed that the information gathered to date should be adequate to determine the probability of encountering the water table prior to actual design and construction.

4.4 Long Term Water Table Levels

Long term water level changes in the Southern Tier are difficult to verify. In some areas, water levels have risen between 1957 and 1981 and appear to have stablized up to 1986. Other areas have risen but may have retreated to the levels of the 1950's. The water tables from the 1957 and 1981 studies may not have had adequate data to provide the accuracy that can now be established.

It is generally believed that the water table in this particular area of northeast Denver will continue to rise as the area develops. With the increase in the density of the ground water monitoring network, the change in long term water levels can better be established. It is difficult at this time to project the time when the water table will stabilize under the growth pattern that exists in northeast Denver and southern Adams County. It is the opinion of the author that in the immediate future any minor increase in water table elevations will not interfere with the design and construction of the proposed runway.

TABLE 1
Water Tabl

T/M HOLE NUMBER	GROUND ELEVATION	6/28/85	7/31/85	8/30/85	10/3/85	10/27/85	12/30/85	2
SP-18	5268.70	5256.03	5255.41	5255.33	5256.13	5256.20		525
SP-10	5258.66	5249.30	5248.55	5248.51	5247.84	5248.04	5248.18	
SP-16	5263.30	5249.76	5249.83	5249.54	5250.01	5249.79	5249.59	521
SP-7	5254.51	5248.00	5248.37	5248.20	5248.65	5248.98	5249.17	
7-1	5277.60	5266.40	5264.84	5264.71	5265.56	5265.57	5265.49	526
7-1 FIBER	5277.60	5267.03	NA	NA	NA	NA	NA	
7-1 3/4"	5277.60	5266.14	5265.33	5265.07	5266.22	5265.95	5265.87	526
7-4	5288.40	5277.76	5279.05	5279.48	5280.21	5279.07	5278.64	527
7-5	5289.90	5283.03	5284.80	5284.92	5284.60	5284.42	5284.21	527
7-2	5288.40	NA	NA	NA	NA	NA	NA	
SP-19	5292.80	NA	NA	NA	NA	NA	NA	
7-3	5315.50	NA	NA	NA	NA	NA	NA	
7-3A	5315.50	NA	NA	NA	NA	NA	NA	
7-6	5307.40	5301.68	5302.91	5303.15	5303.40	5303.22	5302.69	530
8-3	5292.60	5287.42	5287.20	5287.70	5287.86	5287.91	5288.02	527
8-3B	5292.60	5287.58	5287.30	5287.89	5287.93	5287.97	5288.22	527
8-2	5288.70	5279.75	5280.29	5280.02	5279.98	5279.93	5279.99	526
SP-20	5290.20	5286.49	5286.66	5286.45	5285.36	5285.28	5277.30	527
8-8	5305.40	5296.69	5297.37	5297.33	5297.02	5296.81	5296.80	529
8-8A	5305.40	5296.56	5296.95	5297.33	5296.56	5296.45	5296.44	529
8-9	5320.10	5301.91	5302.66	5302.29	5302.15	5302.01	5302.09	530
8-4	5300.30	5293.57	5294.47	5293.69	5293.56	5293.72	5293.84	529
8-4A	5300.30	5293.30	5294.30	5293.63	5293.51	5293.55	5293.70	529
8-7	5307.90	5303.60	5304.95	5303.90	5303.63	5303.90	5304.80	530
8-7A	5307.90	5303.42	5304.79	5303.67	5303.77	5303.97	5304.77	530
8-1	5297.30	NA	NA	NA	NA	NA	NA	
8-6	5318.80	5298.62	5298.68	5298.71	5299.18	5299.09	5299.29	529
DM-9	5257.30	5247.25	5247.76	5247.93	5247.96	5247.86	5247.62	523
10-1	5263.00		5227.87	5231.66	5231.77	5231.85	5231.39	521
10-2	5254.00		5233.58	5233.80	5234.30	5234.40	5234.21	521
12-2A	5254.40	5247.55	5248.52	5248.37	5248.08	5248.13	5248.17	524

FOOTNOTES: 1 NA = DRY
2 BLANK = MISSING / NOT READ / FLOODED

TABLE 1 (SHEET 2 OF 2)
er Table Elevation (Feet)

/85	2/4/86	3/3/86	4/1/86	5/7/86	6/3/86	7/10/86	9/10/86	11/4/86
	5256.12	5256.01	5256.00	5256.72	5256.60	5256.10	5255.44	5255.59
.18		5248.37	5248.40	5250.31	5249.64	5248.30	5245.88	5246.14
.59	5236.17	5249.37	5249.14	5250.31	5249.43	5248.83	5248.65	5248.61
17		5248.88	5249.03	5249.85	5249.06	5247.62	5245.92	5246.63
.49	5265.50	5265.38	5265.50	5265.82	5264.97	5265.87	5265.69	5265.44
NA	NA	NA	5266.64	5266.57	5266.78	NA	5267.06	
87	5265.90	5265.78	5265.85	5266.10	5264.45	5266.05	5265.82	5265.75
64	5278.41	5277.96	5278.13	5279.33	5278.57	5277.52	5277.64	5277.94
21	5270.69	5283.72	5283.63	5284.50	5283.88	5283.10	5283.03	
NA	NA	NA	NA	NA	NA	NA	NA	
NA	NA	NA	NA	NA	NA	NA	5277.23	NA
NA	NA	NA	NA	NA	NA	NA	NA	
NA	NA	NA	NA	NA	NA	NA	NA	
69	5302.33	5301.98	5302.05	5303.24	5302.79	5301.80	5301.96	5302.72
02	5274.50	5287.83	5287.84	5288.08	5287.71	5287.28	5287.31	5287.31
22	5274.80	5288.02	5288.03	5288.26	5287.89	5287.32	5287.40	5288.02
99	5266.73	5279.84	5279.91	5280.56	5280.54	5279.84	5279.66	5280.51
30	5273.14	5286.49	5286.51	5287.19	5286.89	5286.35	5285.80	5285.88
80	5296.87	5296.72	5296.98	5297.97	5297.82	5297.34	5296.86	5296.64
14	5296.36	5296.41	5296.63	5297.58	5297.48	5297.07	5296.58	5296.39
09	5302.01	5301.94	5302.04	5302.75	5302.58	5301.58	5301.44	5302.37
34	5293.79	5293.80	5293.97	5294.23	5293.93	5293.59	5293.20	5293.37
70	5293.71	5293.61	5293.94	5294.20	5293.85	5293.36	5293.03	5293.30
30	5304.94	5305.05	5304.65	5305.71	5305.29	5304.30	5302.48	5303.44
77	5304.87	5304.87	5304.77	5305.64	5305.16	5304.20	5302.67	5303.29
IA	NA	NA	NA	NA	NA	NA	NA	NA
29	5295.75	5298.99	5299.00	5299.33	5299.43	5299.75	5300.06	5299.76
12	5234.25	5247.34	5247.08	5247.84	5247.53	5246.71	5246.62	5246.66
19	5219.60	5230.85	5230.64	5230.85	5230.18	5230.01	5231.14	5230.89
11	5218.28	5233.67	5233.47	5233.91	5234.26	5233.50	5233.99	5233.68
.7	5248.10	5247.99	5247.92	5248.36	5247.85	5247.27	5246.45	5246.92

TABLE 1 (SHE
SEASONAL WATER
Stapleton Interna
Southern Tier of the R
June 28, 1985 through

Water Table Ele

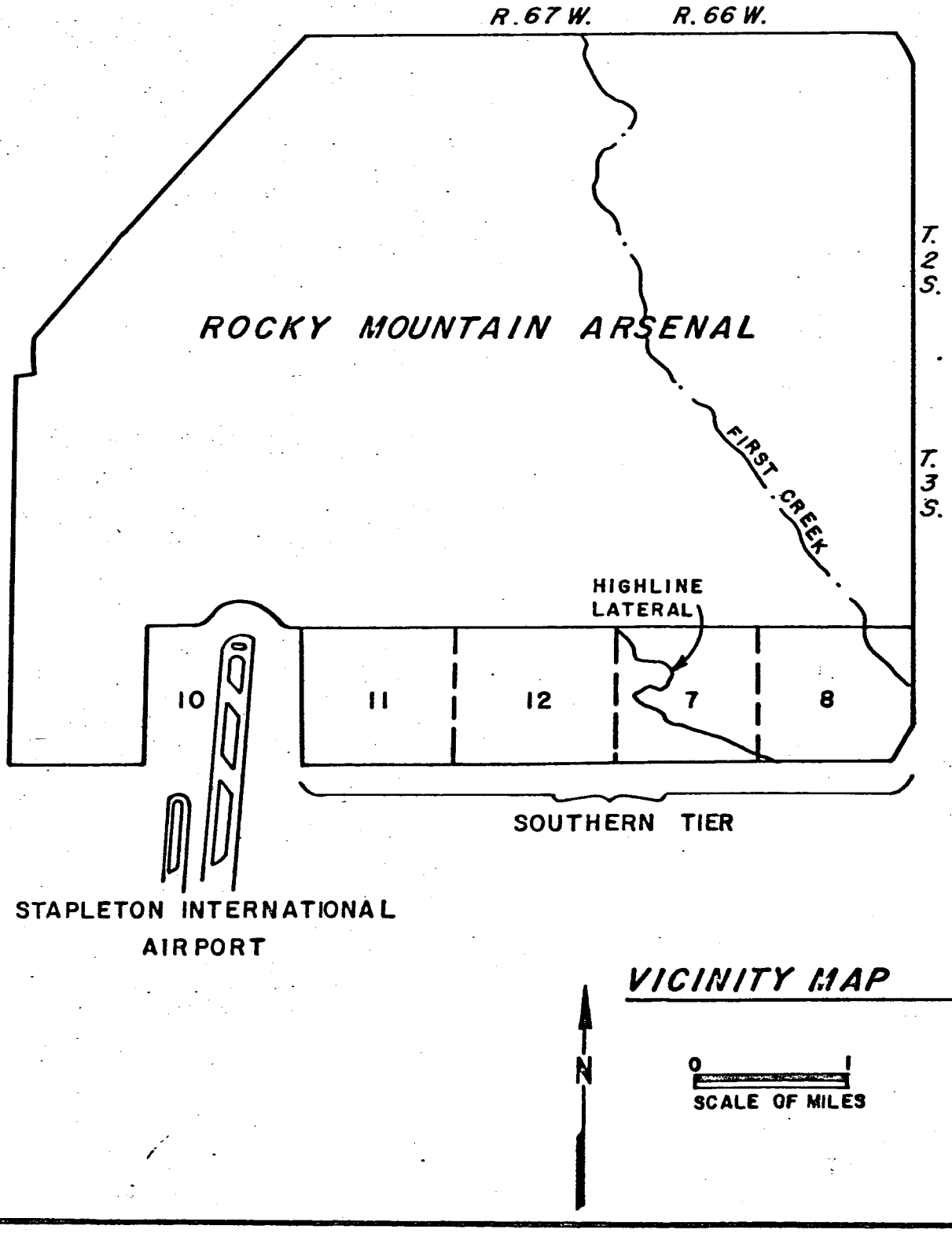
T/M HOLE NUMBER	GROUND ELEVATION	6/28/85	7/31/85	8/30/85	10/3/85	10/27/85	12/30/85	2/4/86
11-1 2"	5241.60	5209.08	5209.93	5210.24	5209.85	5209.53	5209.39	5195.84
11-1 3/4"	5241.60	NA	NA	NA	NA	NA	NA	NA
11-6	5234.80	5224.89	5221.78	5222.02	5222.37	5221.87	5220.86	5207.00
11-7	5264.30	5236.45	5236.75	5237.41	5237.19	5236.81	5235.69	5234.97
11-8	5263.20	5245.99	5247.86	5246.46	5247.42	5246.57	5245.20	5244.46
DM-2	5252.90	5239.19		5237.97	5239.21	5236.86	5235.00	5233.67
SP-17	5250.10	5240.25		5238.05	5239.48	5236.55	5234.43	5233.34
11-4A	5254.70	5240.20	5240.58	5240.55	5241.08	5240.71	5240.38	5240.36
11-3	5233.50	5228.54	5229.45	5229.77	5229.50	5229.43	5229.25	5215.76
11-3A	5233.50	5228.66	5229.47	5229.78	5229.46	5229.44	5229.25	NA
11-2	5235.60	5221.11	5220.73	5221.80	5221.96	5221.65	5221.23	
SP-14	5229.58	5221.90	5222.03	5222.15	5221.99	5222.10		5208.82
SP-12	5227.95	5219.78	5220.08	5220.26	5217.16	5220.45	5225.74	5207.48
SP-9	5236.38	5226.03	5225.95	5226.05	5229.48	5226.72	5226.62	5213.24
SP-13	5242.75	5207.53	5208.29	5208.26	5207.94	5208.82	5208.49	5194.91
SP-15	5238.26	5235.58	5235.74	5236.19	5236.07	5235.90	5235.70	5218.83
11-9	5270.10	5250.16	5251.21	5251.36	5251.44	5251.23	5250.62	5250.16
12-1	5248.10	5239.79	5239.74	5239.71	5240.09	5240.20	5240.32	5226.92
12-1A	5248.10	5239.60	5239.55	5239.44	5239.88	5240.05	5240.22	NA
12-6	5260.40	5247.61	5247.52	5247.36	5248.26	5248.29	5248.32	5247.99
12-6A	5260.40	5247.72	5247.57	5247.37	5248.29	5248.40	5248.37	5248.11
12-6B	5260.40	NA	NA	NA	NA	NA	NA	NA
12-7	5262.20	5257.33	5258.28	5258.07	5258.06	5257.47	5257.74	5256.43
12-7A	5262.20	5256.42	5258.35	5258.13	5258.08	5257.85		5257.44
12-8	5285.50	5270.79	5270.49	5270.18	5271.00	5270.94	5270.91	5257.54
12-9	5291.20	5276.44	5275.98	5275.84	5276.48	5276.47	5276.51	5276.31
12-9A	5291.20	5276.10	5276.28	5275.49	5276.13	5276.09	5276.01	5276.11
12-4	5278.60	5269.92	5270.08	5270.07	5270.02	5269.95	5269.91	5269.91
12-3	5266.90	5255.20	5255.34	5254.75	5254.81	5254.29	5254.20	5254.18
12-2	5254.40	5247.60	5248.73	5248.37	5248.28	5248.27	5248.34	5248.26

FOOTNOTES: 1 NA = DRY
2 BLANK = MISSING / NOT READ / FLOODED

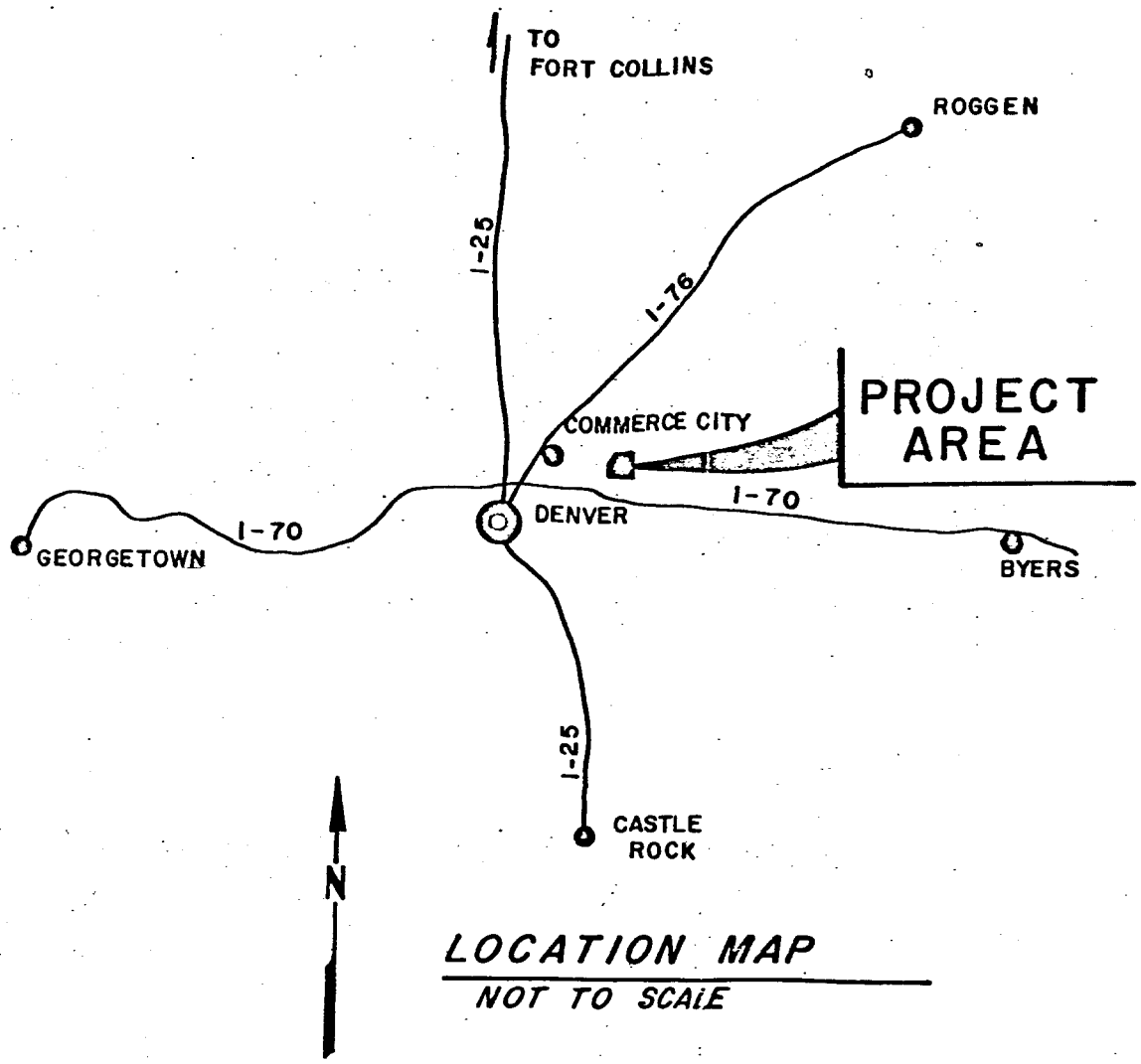
LE 1 (SHEET 1 OF 2)
AL WATER TABLE READINGS
on International Airport
of the Rocky Mountain Arsenal
85 through November 4, 1986

Table Elevation (feet)

S	2/4/86	3/3/86	4/1/86	5/7/86	6/3/86	7/10/86	9/10/86	11/4/86
9	5195.84	5208.94	5208.77	5209.37	5209.40	5209.14	5210.70	5208.65
A	NA	5219.22	5219.25	NA	NA	NA	NA	NA
6	5207.00	5219.92	5215.77	5220.88	5221.03	5220.76	5220.76	5220.21
9	5234.97	5234.78	5234.04	5235.41	5235.50	5235.45	5235.67	5234.74
0	5244.46	5243.98	5243.73	5245.94	5245.82	5245.42	5245.73	5245.32
0	5233.67	5233.49	5233.30	5237.56	5236.74	5233.13	5236.35	5236.39
3	5233.34	5233.31	5233.11	5237.11	5237.11	5235.97	5236.61	5236.95
8	5240.38	5239.68	5239.39	5240.70	5240.67	5239.96	5239.47	5239.63
5	5215.78	5228.84	5228.68	5229.39	5229.11	5228.45	5228.01	5228.59
5	NA	5228.83	5228.69	5229.36	5229.14	5228.42	5227.98	5228.58
3		5220.77	5220.66	5221.78	5221.60	5221.10	5220.69	5219.65
	5208.82	5222.02	5221.97	5222.26	5222.07	5221.56	5221.27	5221.85
t	5207.46	5220.46	5220.55	5220.66	5220.41	5219.83	5219.80	5220.23
?	5213.24	5225.63	5225.65	5226.07	5225.99	5225.65	5224.62	5223.78
3	5194.91	5208.11	5207.95	5208.38	5208.17	5207.82	5207.36	5207.23
)	5218.83	5235.34	5235.35	5235.96	5235.67	5235.08	5235.24	5235.44
?	5250.18	5249.72	5249.52	5250.35	5250.60	5249.94	5250.17	5252.22
!	5226.92	5239.97	5239.86	5240.73	5240.32	5239.57	5239.06	5239.45
?	NA	5239.82	5239.73	5240.66	5240.22	5239.44	5238.57	5239.25
!	5247.99	5247.85	5247.83	5248.62	5248.32	5247.78	5247.08	5247.40
'	5248.11	5247.84	5247.90	5248.67	5248.42	5247.82	5247.14	5247.45
	NA	NA	NA	5249.91	NA	NA	NA	NA
!	5256.43	5256.18	5255.90	5256.84	5256.78	5256.41	5256.01	5256.15
	5257.44	5257.16	5257.14	5257.92	5257.78	5255.49	5257.16	5257.28
	5257.54	5270.62	5270.62	5271.31	5271.22	5270.84	5270.59	5270.58
	5276.31	5276.35	5276.20	5276.95	5276.87	5276.50	5276.24	5276.25
	5276.11	5275.99	5275.58	5276.55	5276.55	5276.22	5275.90	5275.80
	5269.91	5269.95	5269.88	5269.67	5270.55	5269.96	5269.48	5269.39
	5254.18	5254.13	5254.16	5254.66	5254.49	5253.81	5253.26	5253.01
	5248.26	5248.02	5248.03	5248.48	5248.13	5247.47	5246.68	5247.15



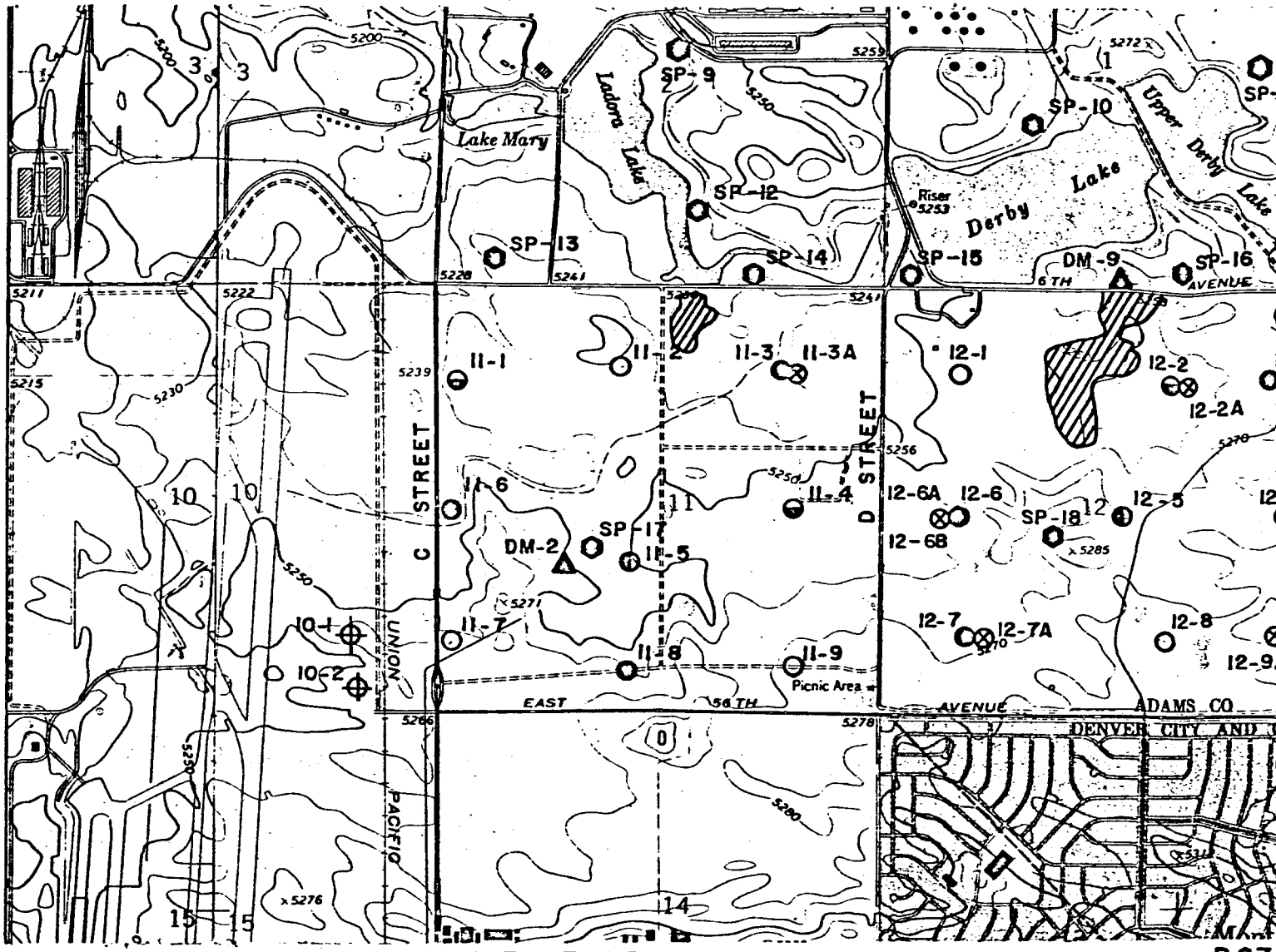
VICINITY MAP



LOCATION MAP
NOT TO SCALE

PROJECT
VICINITY AND LOCATION MAP
STAPLETON INTERNATIONAL AIRPORT
EXPANSION PROJECT
SOUTHERN TIER OF ROCKY MOUNTAIN ARSENAL

blatchley associates, inc.
CONSULTING ENGINEERS
2525 SOUTH WADSWORTH BOULEVARD, #306
DENVER, COLORADO 80227

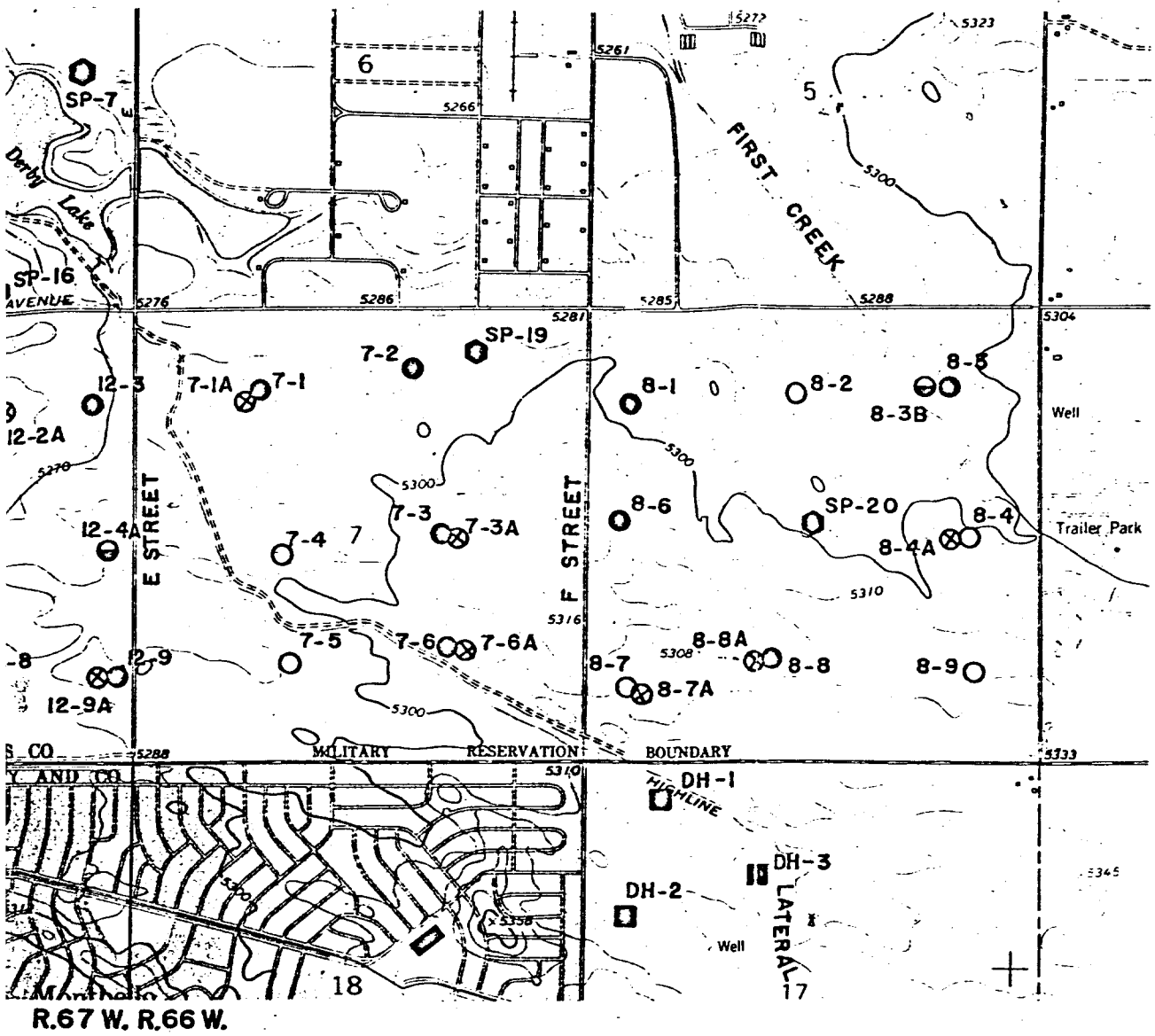


LEGEND

R.67

- 11-2 — Phase 1 test/monitor hole with identifying number.
- 11-3 — Phase 2 test/monitor hole with identifying number.
- 11-1 — Phase 3 test/monitor hole with identifying number.
- 11-3A — Phase 4 test/monitor hole with identifying number.
- 11-5 — Phase 5 test/monitor hole with identifying number.
- 10-1 — Phase 6 test/monitor hole with identifying number.
- SP-17 — Pre-Existing monitor hole with identifying number
- DM-9 — Pre-Existing monitor hole with identifying number.
- DH-1 — Pre-Existing monitor hole with identifying number
- Area of known contamination

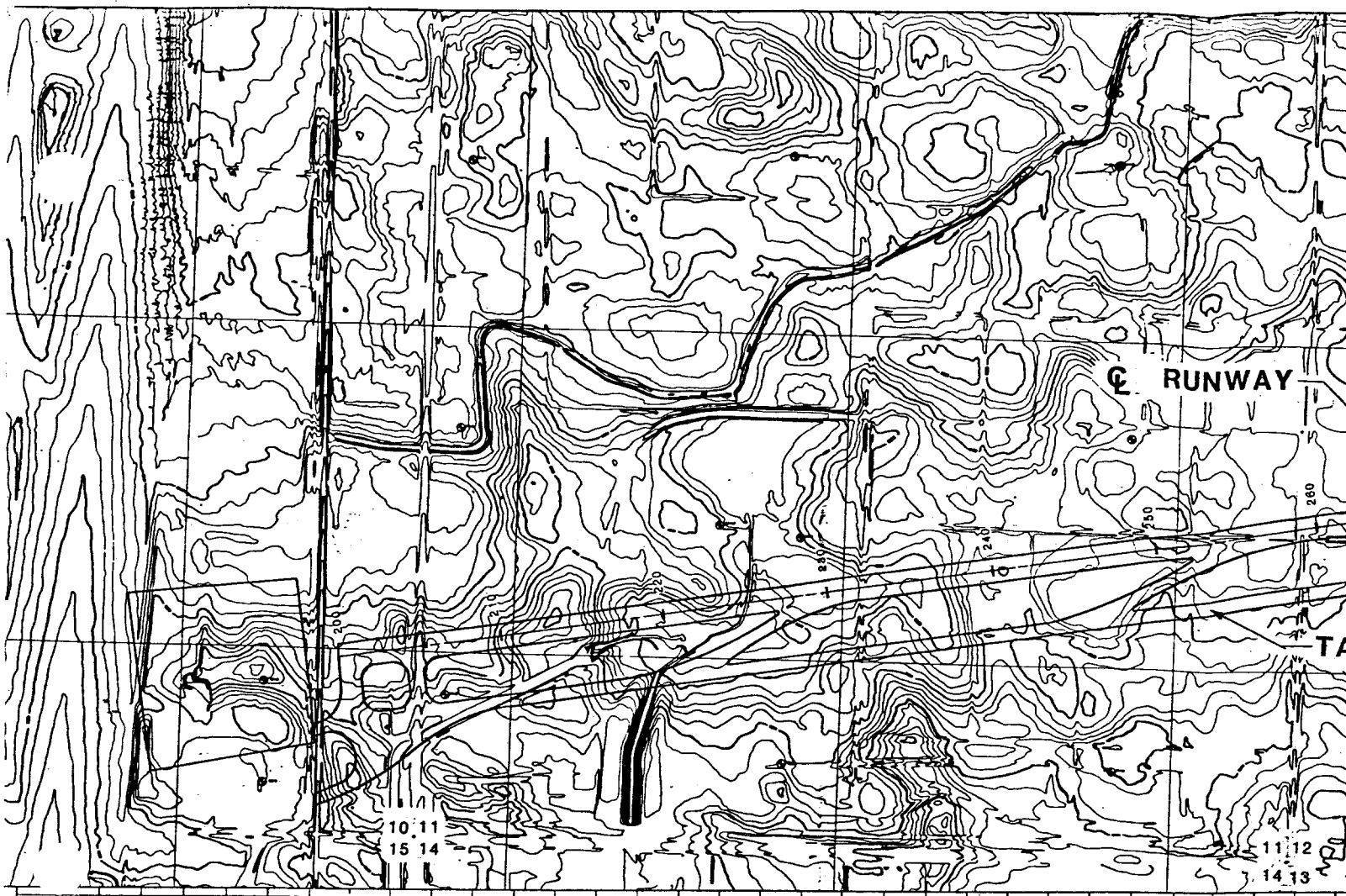
FIGURE 2



TEST/MONITOR HOLES
LOCATION MAP
STAPLETON INTERNATIONAL AIRPORT
SOUTHERN TIER OF ROCKY MOUNTAIN ARSENAL

dames & moore
CONSULTING ENGINEERS
2525 SOUTH WADSWORTH BOULEVARD, #308
DENVER, COLORADO 80227

12/86



PLA

500 0 500

SCALE I
CONTOUR INTE

ELEVATION IN FEET ABOVE M.S.L.

C/L R. R. Tracks
Sta. 198+45 El. 5259.00

Runway Beginning

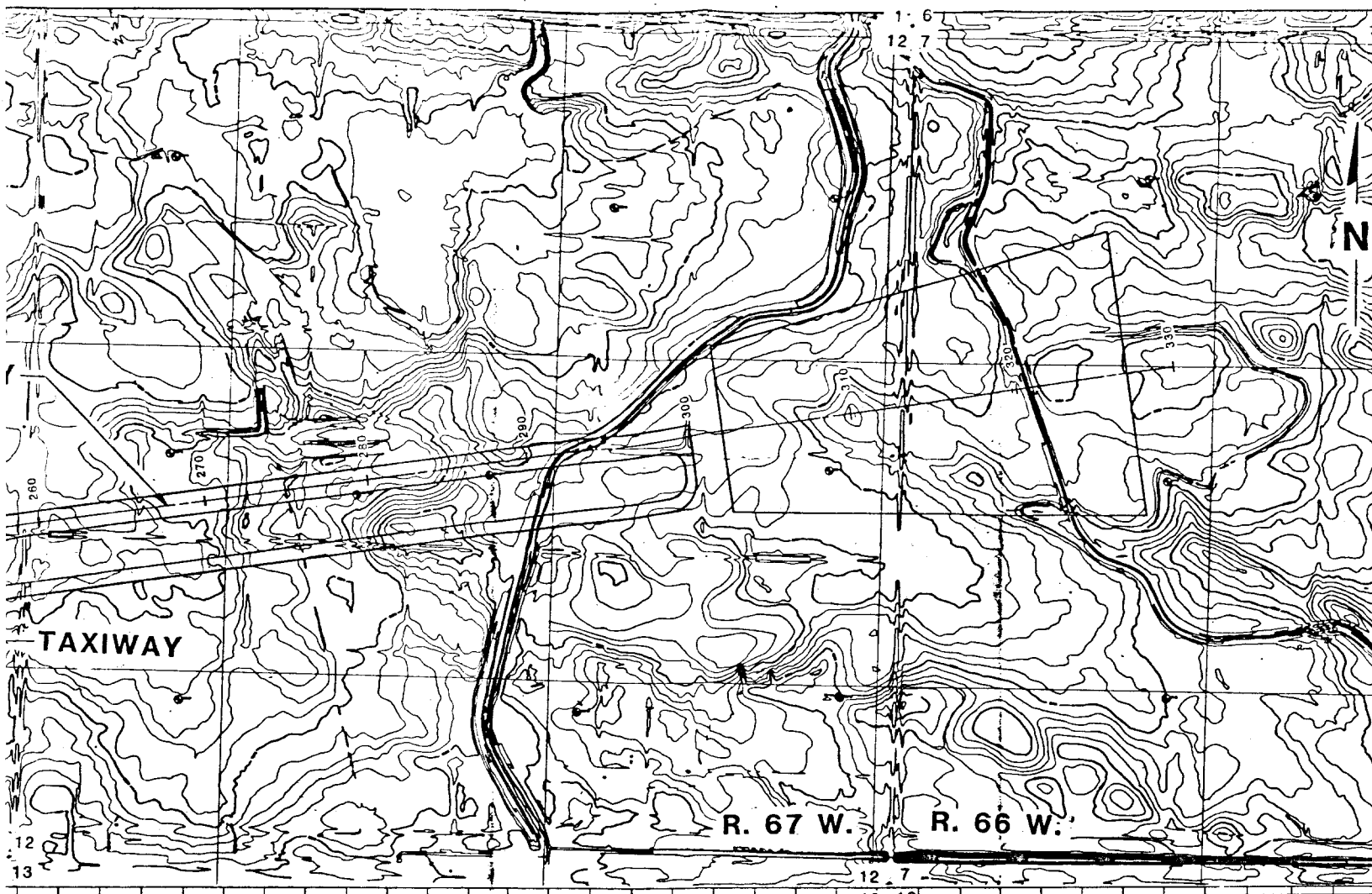
Sta. 200+00 El. 5255.00

Existing Ground Surface

0.2 % Slope of Runway

PROF
℄ RUNW

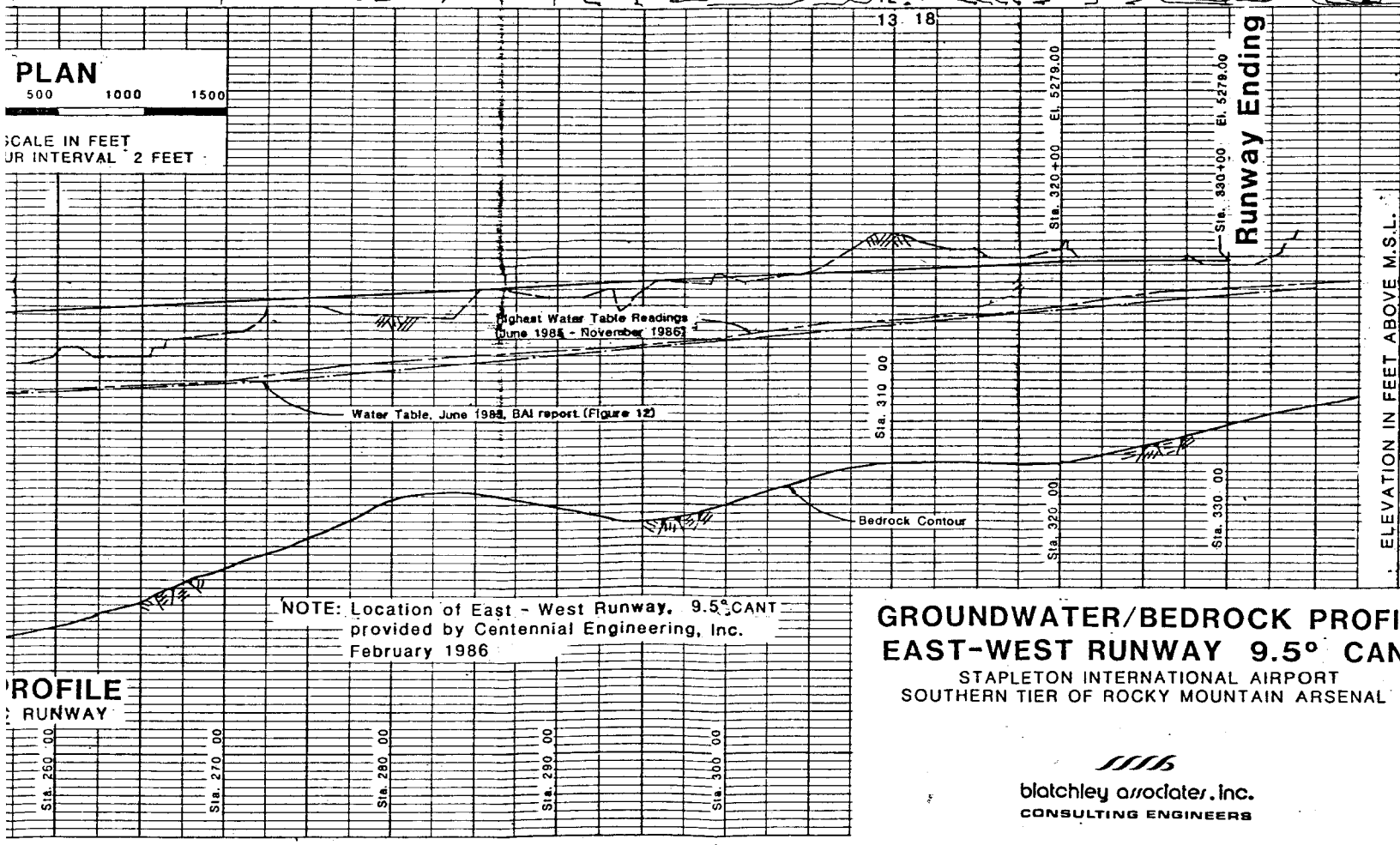
Sta. 190 00
Sta. 200 00
Sta. 210 00
Sta. 220 00
Sta. 230 00
Sta. 240 00
Sta. 250 00
Sta. 260 00



PLAN

500 1000 1500

SCALE IN FEET
UR INTERVAL 2 FEET



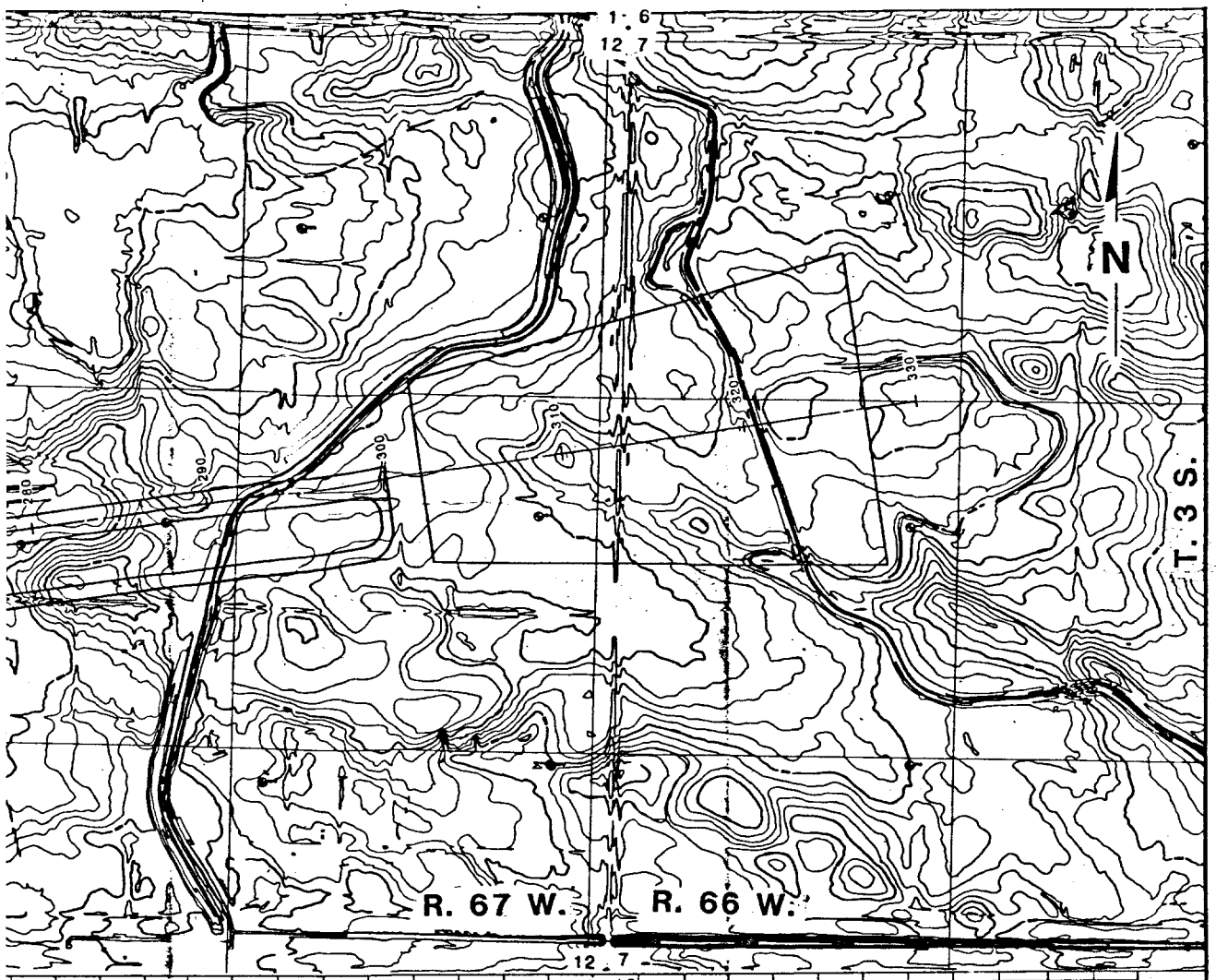
NOTE: Location of East - West Runway, 9.5° CANT provided by Centennial Engineering, Inc. February 1986

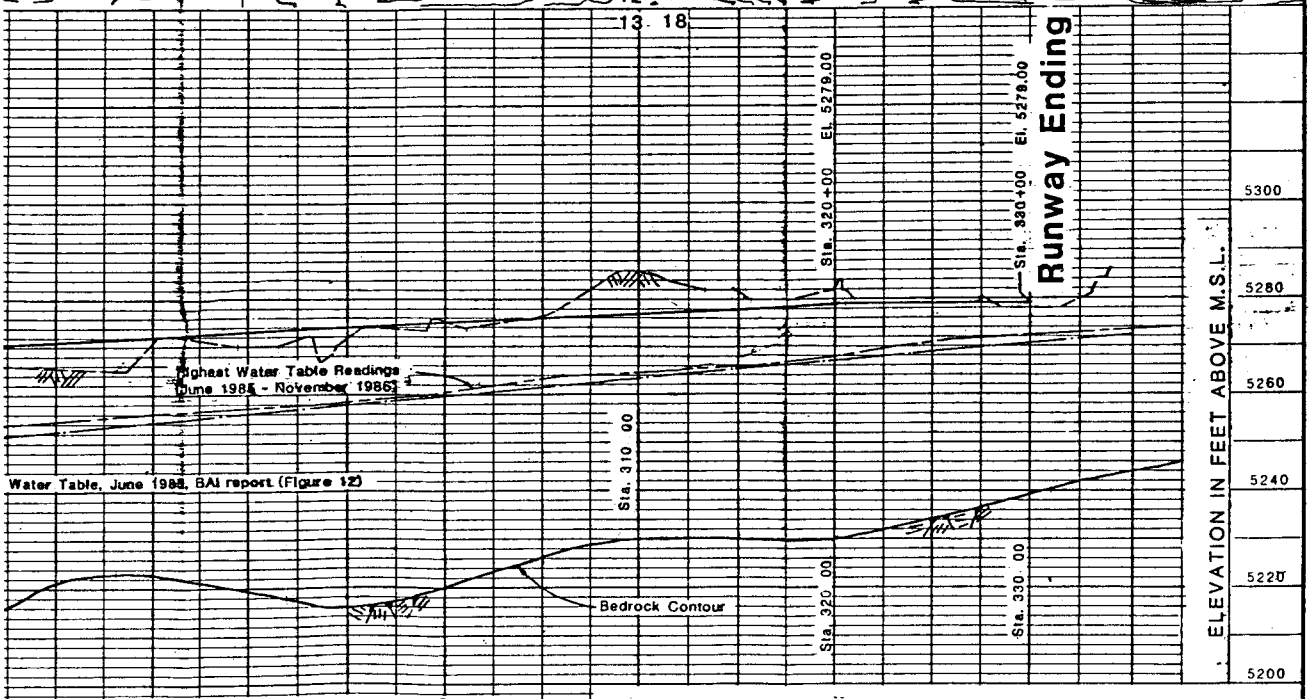
ROFILE
RUNWAY

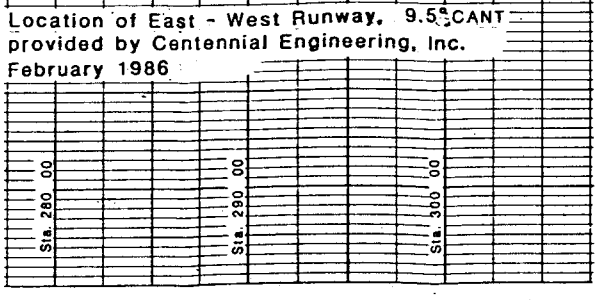
GROUNDWATER/BEDROCK PROFI
EAST-WEST RUNWAY 9.5° CAN

STAPLETON INTERNATIONAL AIRPORT
SOUTHERN TIER OF ROCKY MOUNTAIN ARSENAL

blatchley associates, inc.
CONSULTING ENGINEERS







GROUNDWATER/BEDROCK PROFILE
EAST-WEST RUNWAY 9.5° CANT

STAPLETON INTERNATIONAL AIRPORT
SOUTHERN TIER OF ROCKY MOUNTAIN ARSENAL

blatchley associates, inc.
CONSULTING ENGINEERS

Figure 4

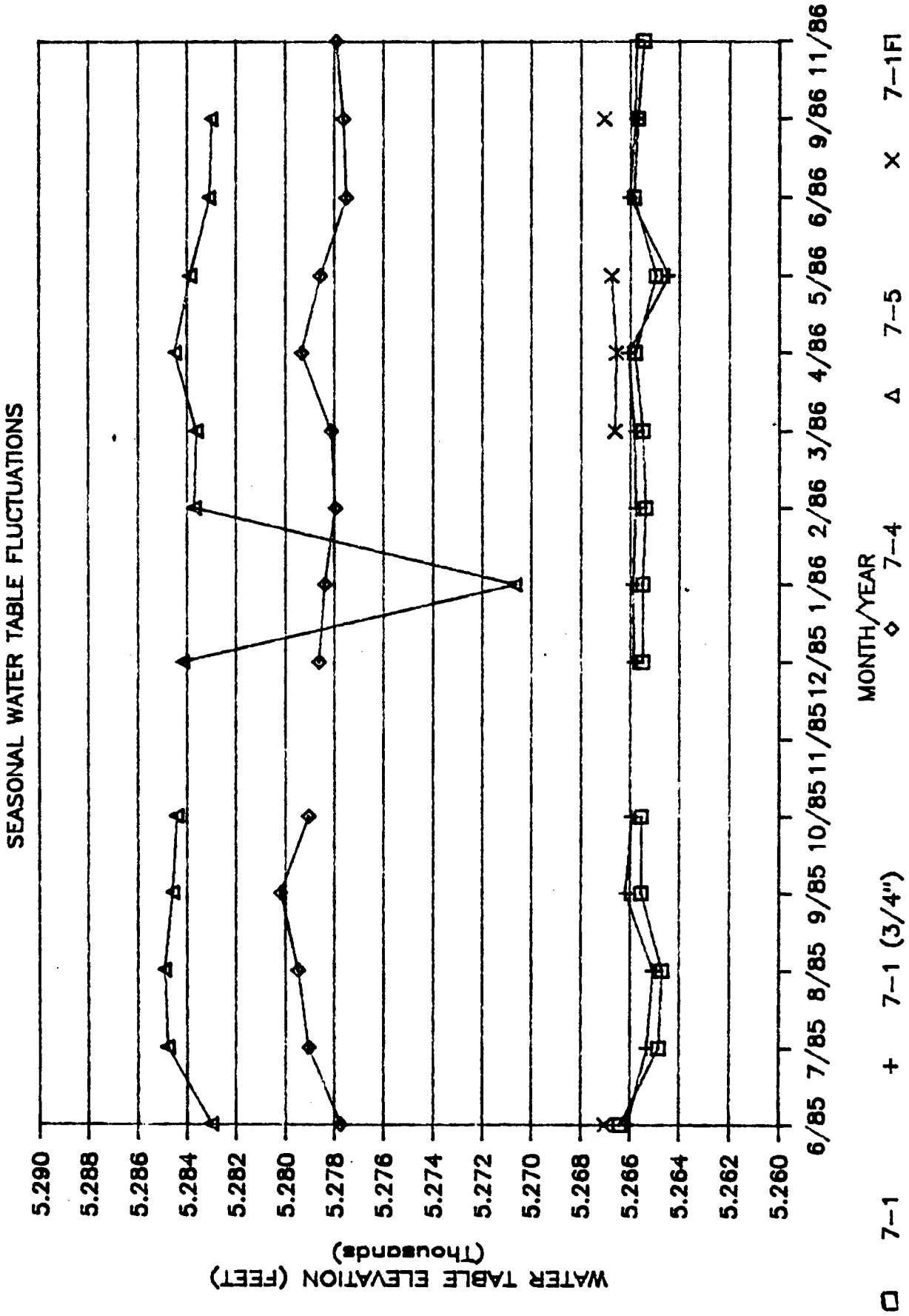

SEASONAL WATER TABLE FLUCTUATIONS
WATER TABLE ELEVATION (FEET)
(Thousands)
5.290
5.288
5.286
5.284
5.282
5.280
5.278
5.276
5.274
5.272
5.270
5.268
5.266
5.264
5.262
5.260
6/85 7/85 8/85 9/85 10/85 11/85 12/85 1/86 2/86 3/86 4/86 5/86 6/86 9/86 11/86
MONTH/YEAR
7-1
7-1 (3/4")
7-4
7-5
7-1F

Figure 5

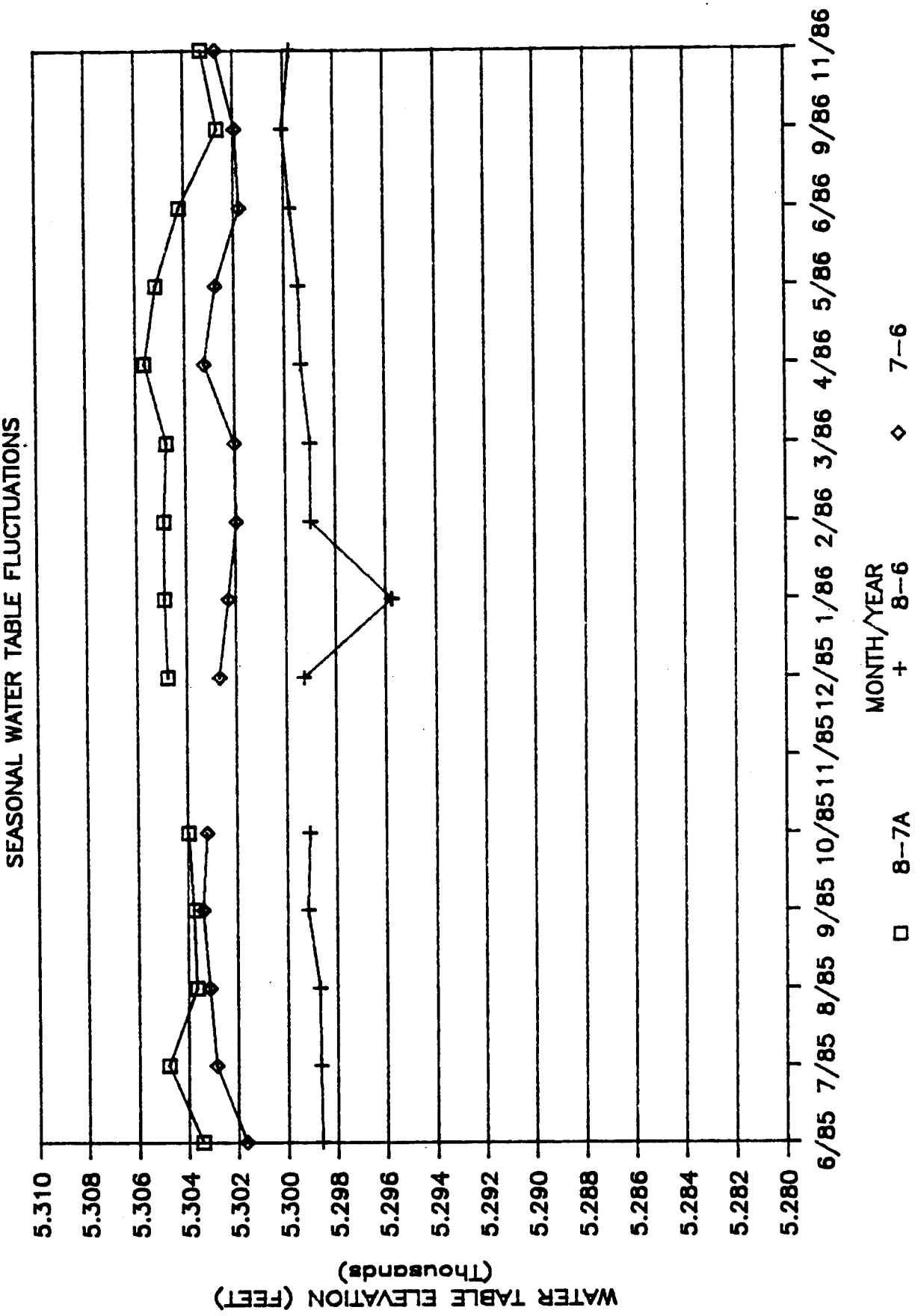

SEASONAL WATER TABLE FLUCTUATIONS
WATER TABLE ELEVATION (FEET)
(Thousands)
5.310
5.308
5.306
5.304
5.302
5.300
5.298
5.296
5.294
5.292
5.290
5.288
5.286
5.284
5.282
5.280
6/85 7/85 8/85 9/85 10/85 11/85 12/85 1/86 2/86 3/86 4/86 5/86 6/86 9/86 11/86
MONTH/YEAR
□ 8-7A
+ 8-6
◇ 7-6

Figure 6

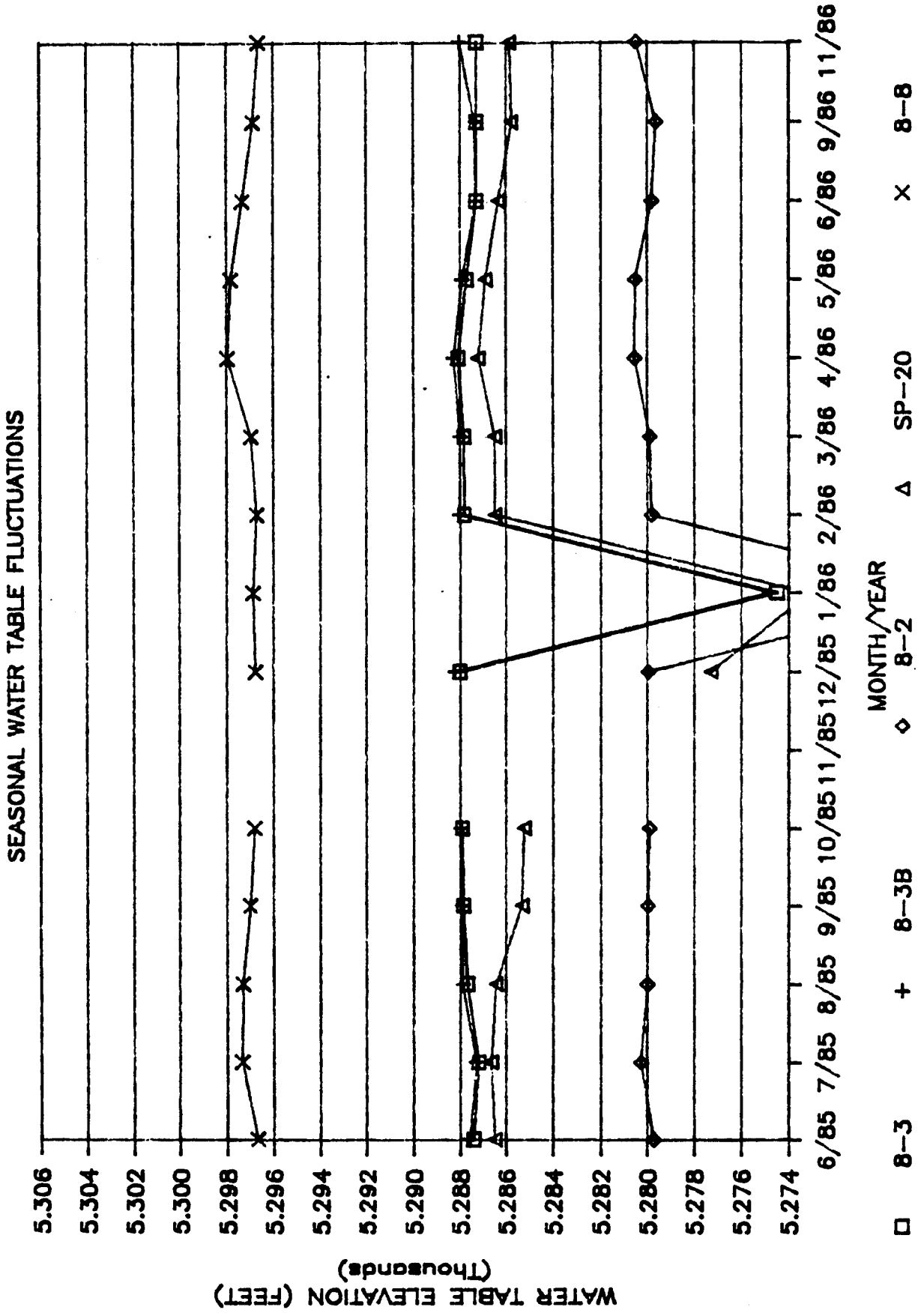

SEASONAL WATER TABLE FLUCTUATIONS
WATER TABLE ELEVATION (FEET)
(Thousands)
5.306
5.304
5.302
5.300
5.298
5.296
5.294
5.292
5.290
5.288
5.286
5.284
5.282
5.280
5.278
5.276
5.274
6/85 7/85 8/85 9/85 10/85 11/85 12/85 1/86 2/86 3/86 4/86 5/86 6/86 9/86 11/86
MONTH/YEAR
□ 8-3
+ 8-3B
◇ 8-2
△ SP-20
× 8-8

Figure 7

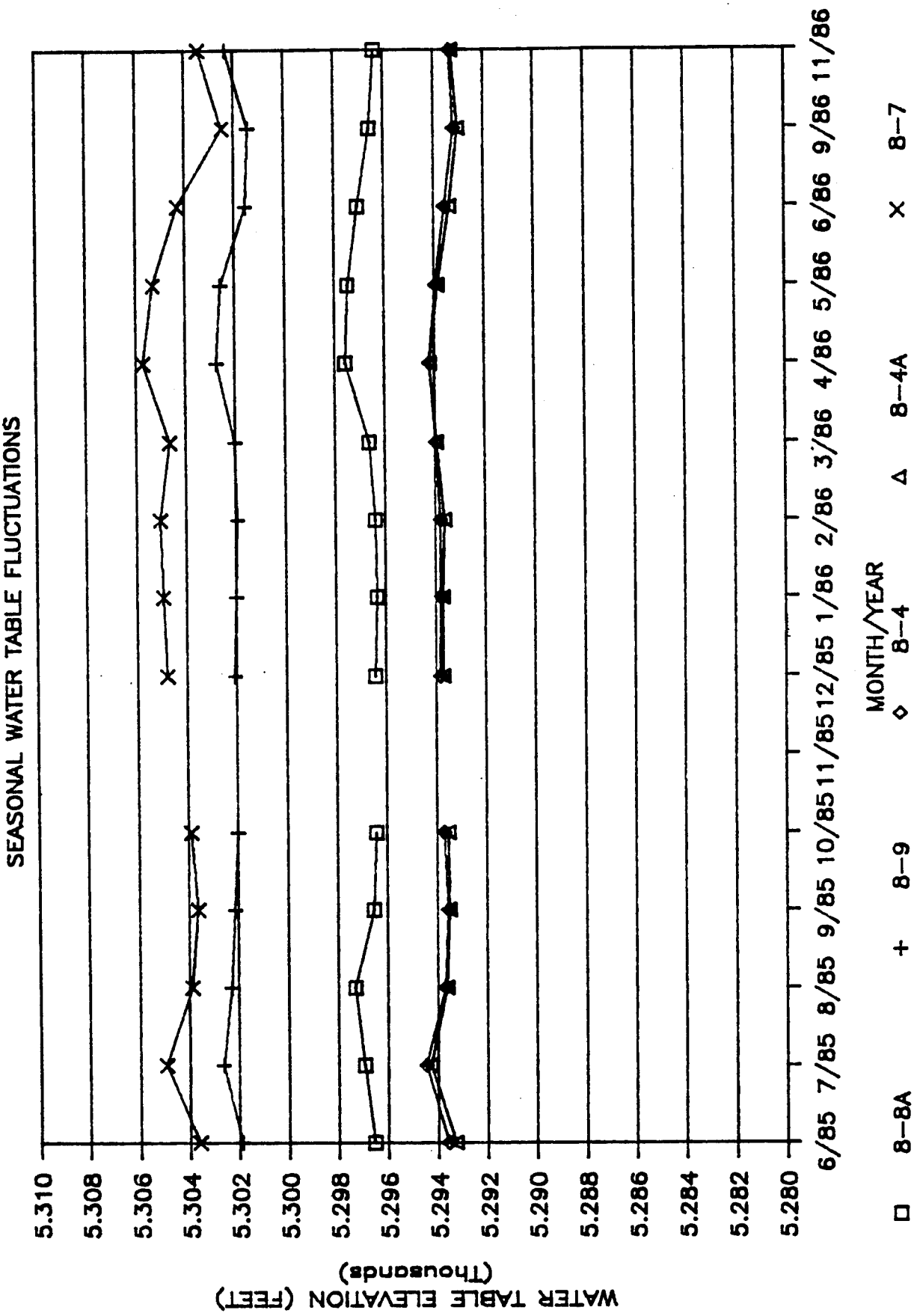

SEASONAL WATER TABLE FLUCTUATIONS
WATER TABLE ELEVATION (FEET)
(Thousands)
5.310
5.308
5.306
5.304
5.302
5.300
5.298
5.296
5.294
5.292
5.290
5.288
5.286
5.284
5.282
5.280
6/85 7/85 8/85 9/85 10/85 11/85 12/85 1/86 2/86 3/86 4/86 5/86 6/86 9/86 11/86
MONTH/YEAR
□ 8-8A
+ 8-9
◇ 8-4
△ 8-4A
× 8-7

Figure 8

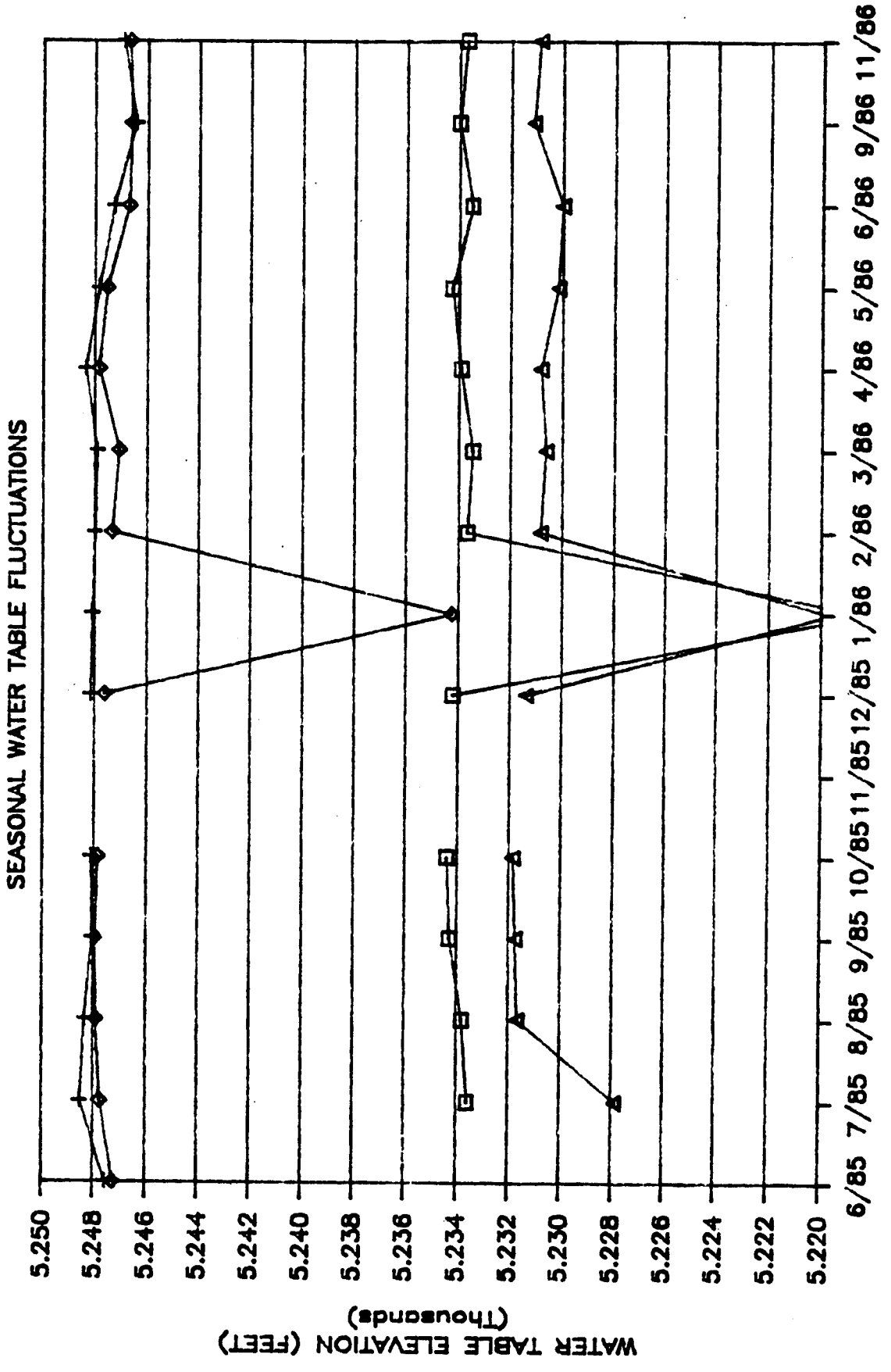

SEASONAL WATER TABLE FLUCTUATIONS
WATER TABLE ELEVATION (FEET)
(Thousands)
5.250
5.248
5.246
5.244
5.242
5.240
5.238
5.236
5.234
5.232
5.230
5.228
5.226
5.224
5.222
5.220
6/85 7/85 8/85 9/85 10/85 11/85 12/85 1/86 2/86 3/86 4/86 5/86 6/86 9/86 11/86
MONTH/YEAR
□ 10-2
+ 12-2A
◇ DM-9
△ 10-1

Figure 9

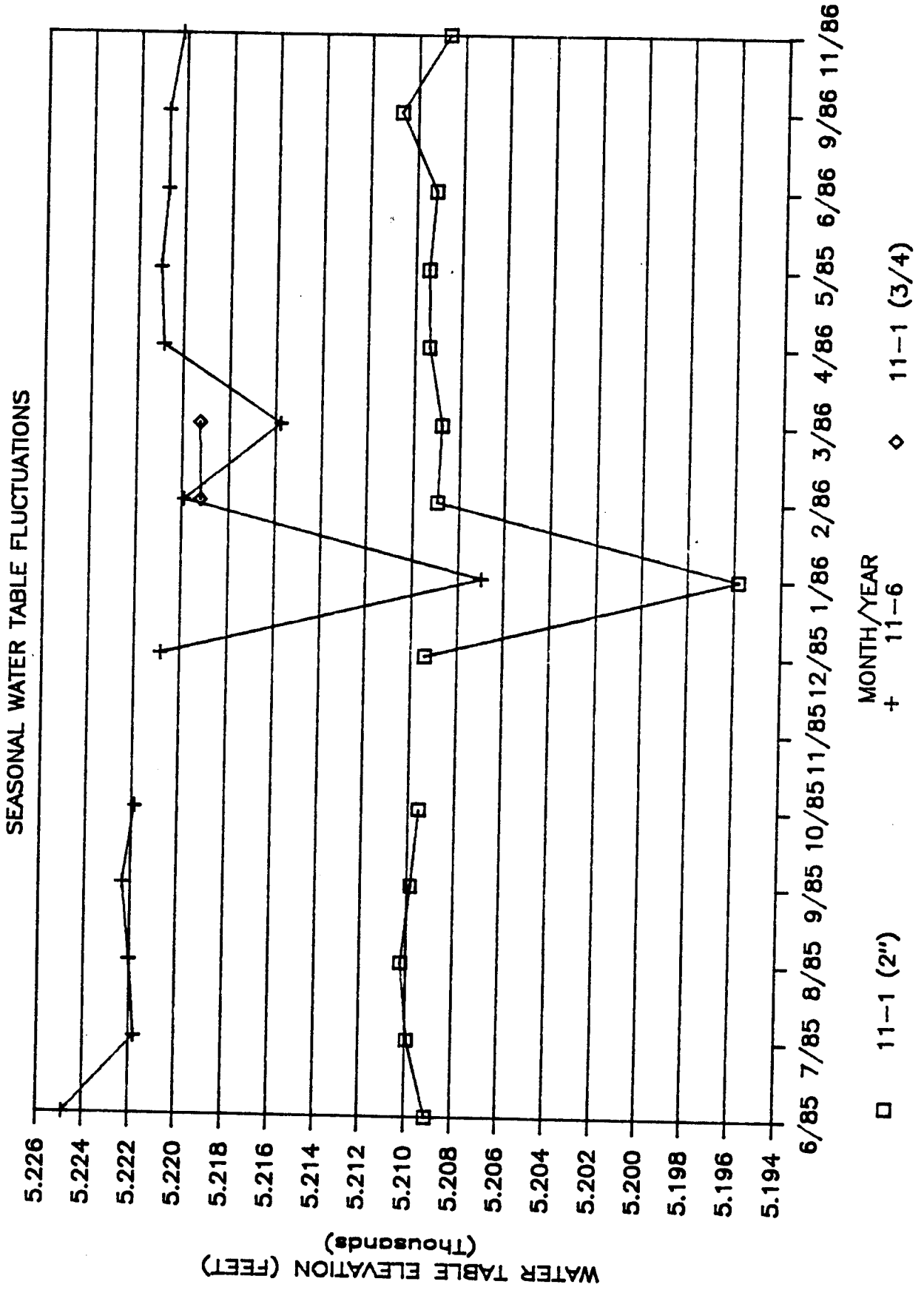

SEASONAL WATER TABLE FLUCTUATIONS
WATER TABLE ELEVATION (FEET)
(Thousands)
5.226
5.224
5.222
5.220
5.218
5.216
5.214
5.212
5.210
5.208
5.206
5.204
5.202
5.200
5.198
5.196
5.194
6/85 7/85 8/85 9/85 10/85 11/85 12/85 1/86 2/86 3/86 4/86 5/85 6/86 9/86 11/86
MONTH/YEAR
□ 11-1 (2")
+ 11-6
◇ 11-1 (3/4)

Figure 10

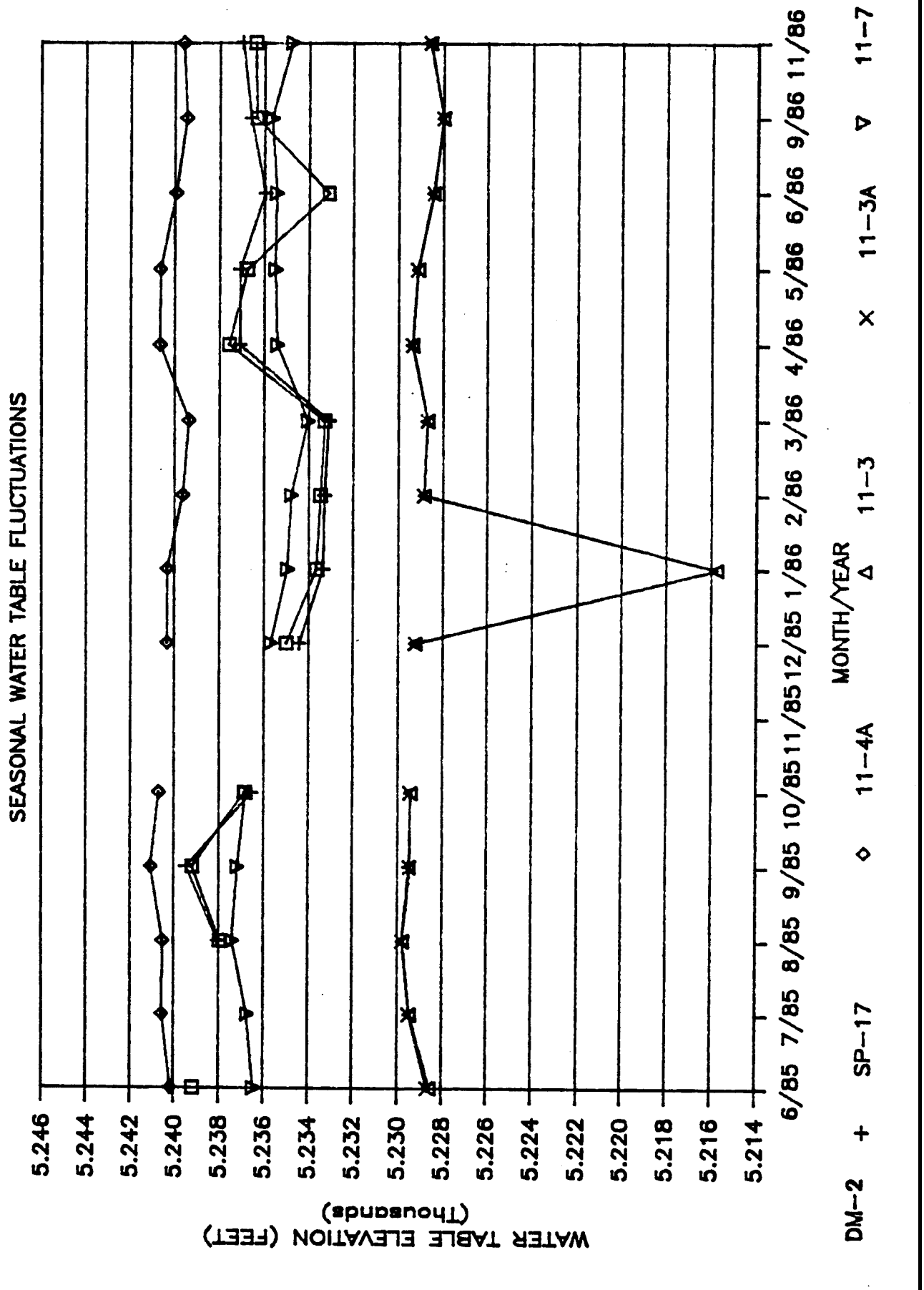

SEASONAL WATER TABLE FLUCTUATIONS
WATER TABLE ELEVATION (FEET)
(Thousands)
5.246
5.244
5.242
5.240
5.238
5.236
5.234
5.232
5.230
5.228
5.226
5.224
5.222
5.220
5.218
5.216
5.214
6/85 7/85 8/85 9/85 10/85 11/85 12/85 1/86 2/86 3/86 4/86 5/86 6/86 9/86 11/86
MONTH/YEAR
□ DM-2
+ SP-17
◇ 11-4A
△ 11-3
× 11-3A
▽ 11-7

Figure 11

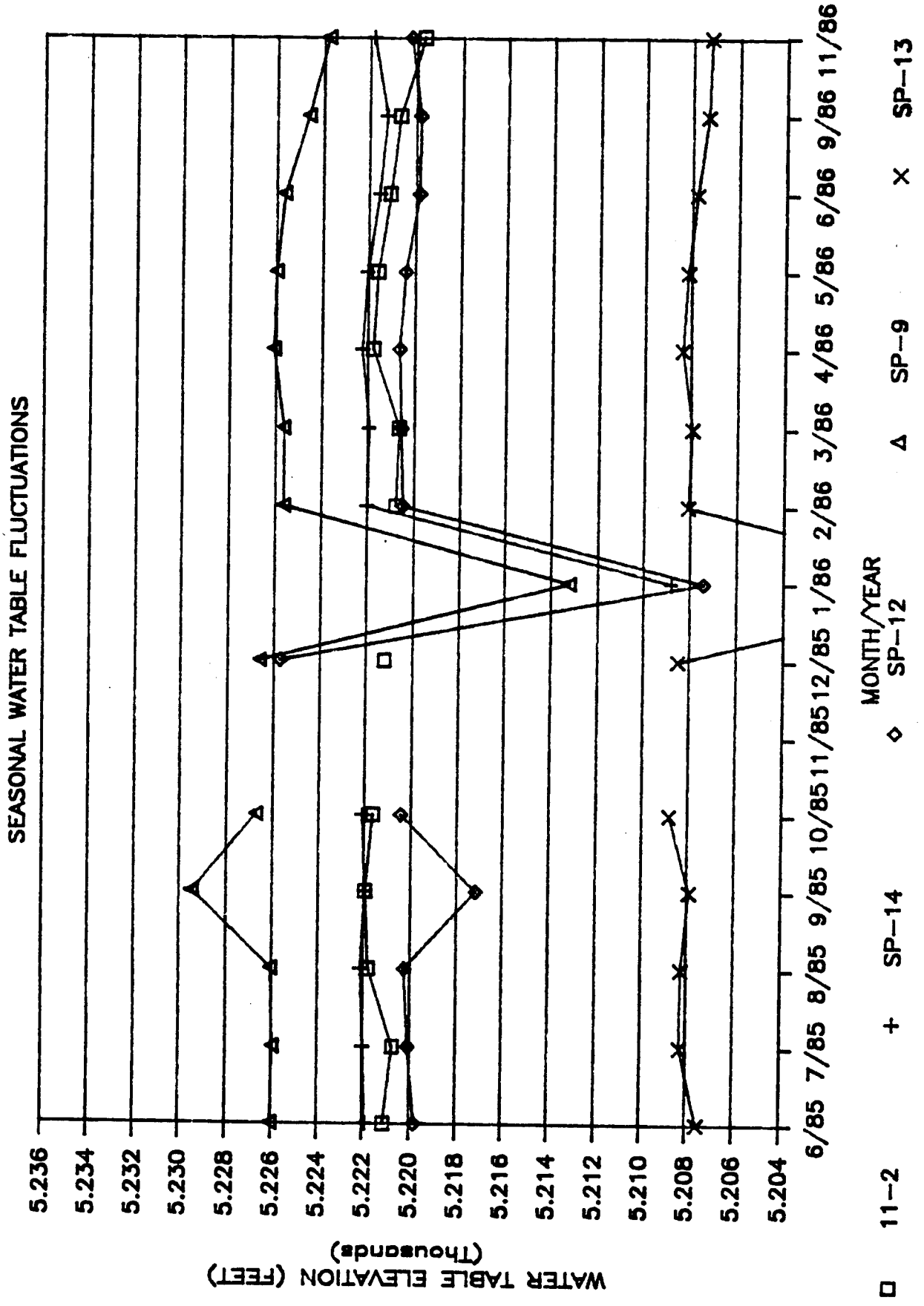
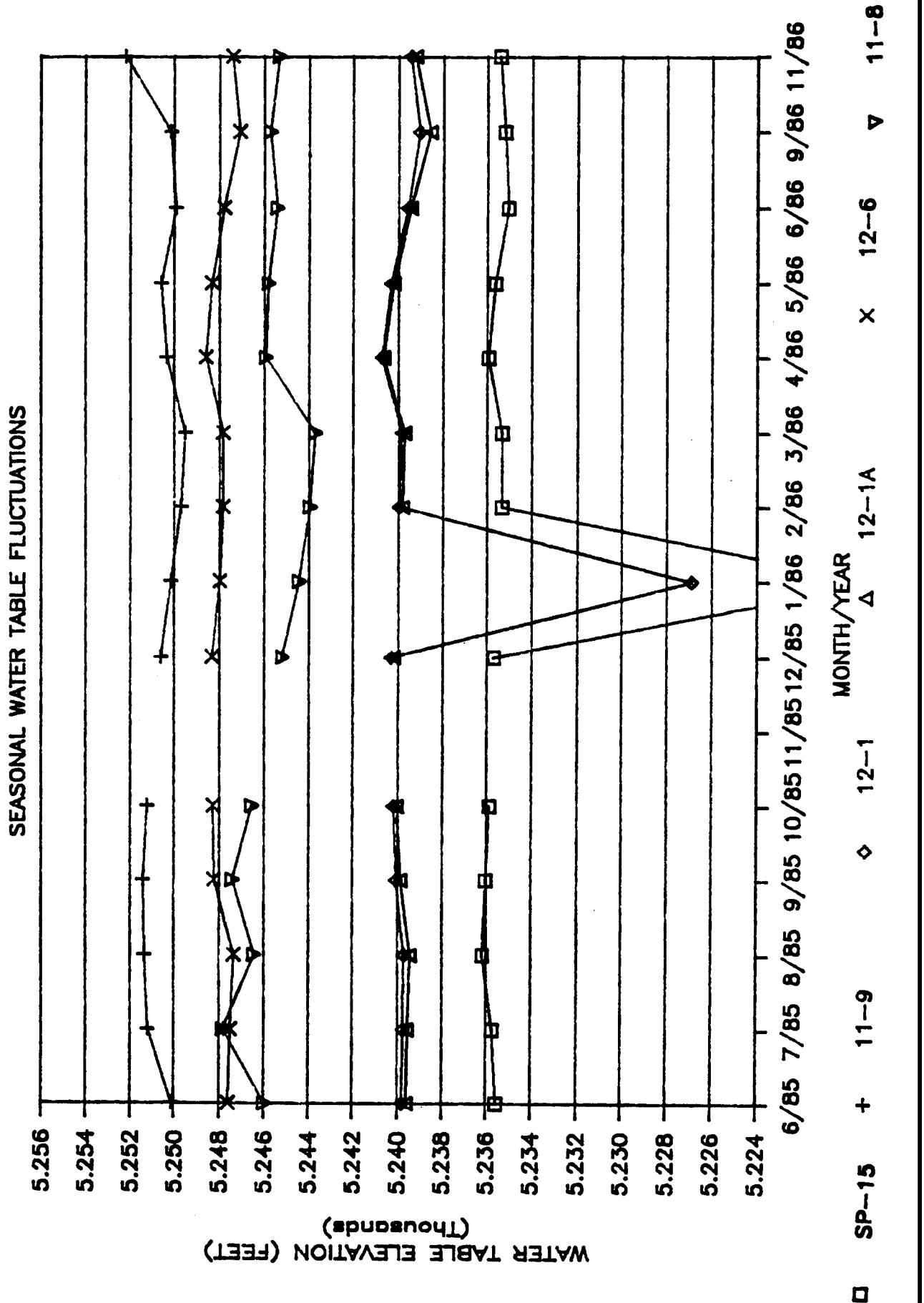

SEASONAL WATER TABLE FLUCTUATIONS
WATER TABLE ELEVATION (FEET)
(Thousands)
5.236
5.234
5.232
5.230
5.228
5.226
5.224
5.222
5.220
5.218
5.216
5.214
5.212
5.210
5.208
5.206
5.204
6/85 7/85 8/85 9/85 10/85 11/85 12/85 1/86 2/86 3/86 4/86 5/86 6/86 9/86 11/86
MONTH/YEAR
11-2
SP-14
SP-12
SP-9
SP-13

Figure 12


SEASONAL WATER TABLE FLUCTUATIONS
WATER TABLE ELEVATION (FEET)
(Thousands)
5.256
5.254
5.252
5.250
5.248
5.246
5.244
5.242
5.240
5.238
5.236
5.234
5.232
5.230
5.228
5.226
5.224
6/85 7/85 8/85 9/85 10/85 11/85 12/85 1/86 2/86 3/86 4/86 5/86 6/86 9/86 11/86
MONTH/YEAR
SP-15
11-9
12-1
12-1A
12-6
11-8

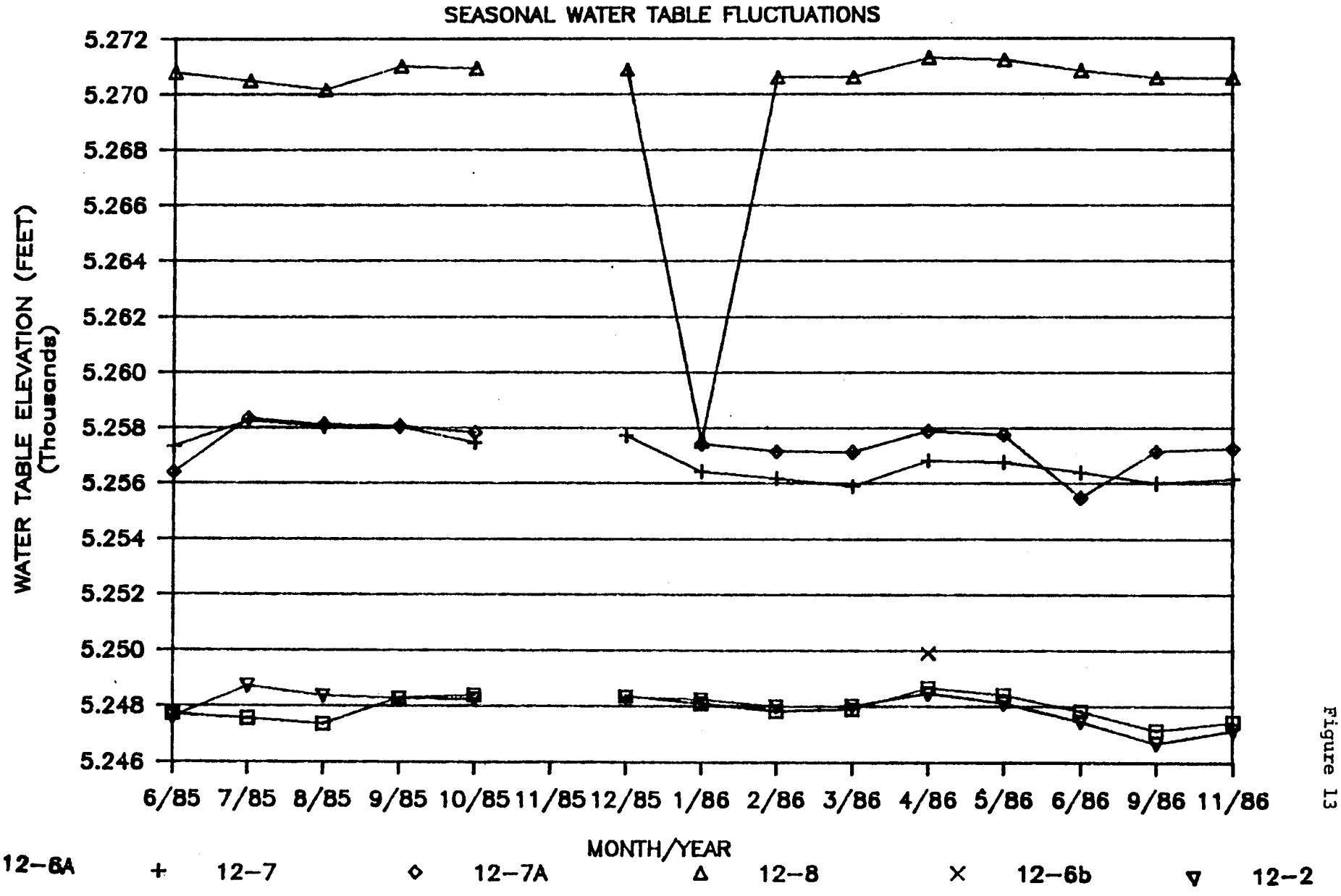

SEASONAL WATER TABLE FLUCTUATIONS
WATER TABLE ELEVATION (FEET)
(Thousands)
5.272
5.270
5.268
5.266
5.264
5.262
5.260
5.258
5.256
5.254
5.252
5.250
5.248
5.246
6/85
7/85
8/85
9/85
10/85
11/85
12/85
1/86
2/86
3/86
4/86
5/86
6/86
9/86
11/86
MONTH/YEAR
12-6A
12-7
12-7A
12-8
12-6b
12-2

Figure 13

Figure 14

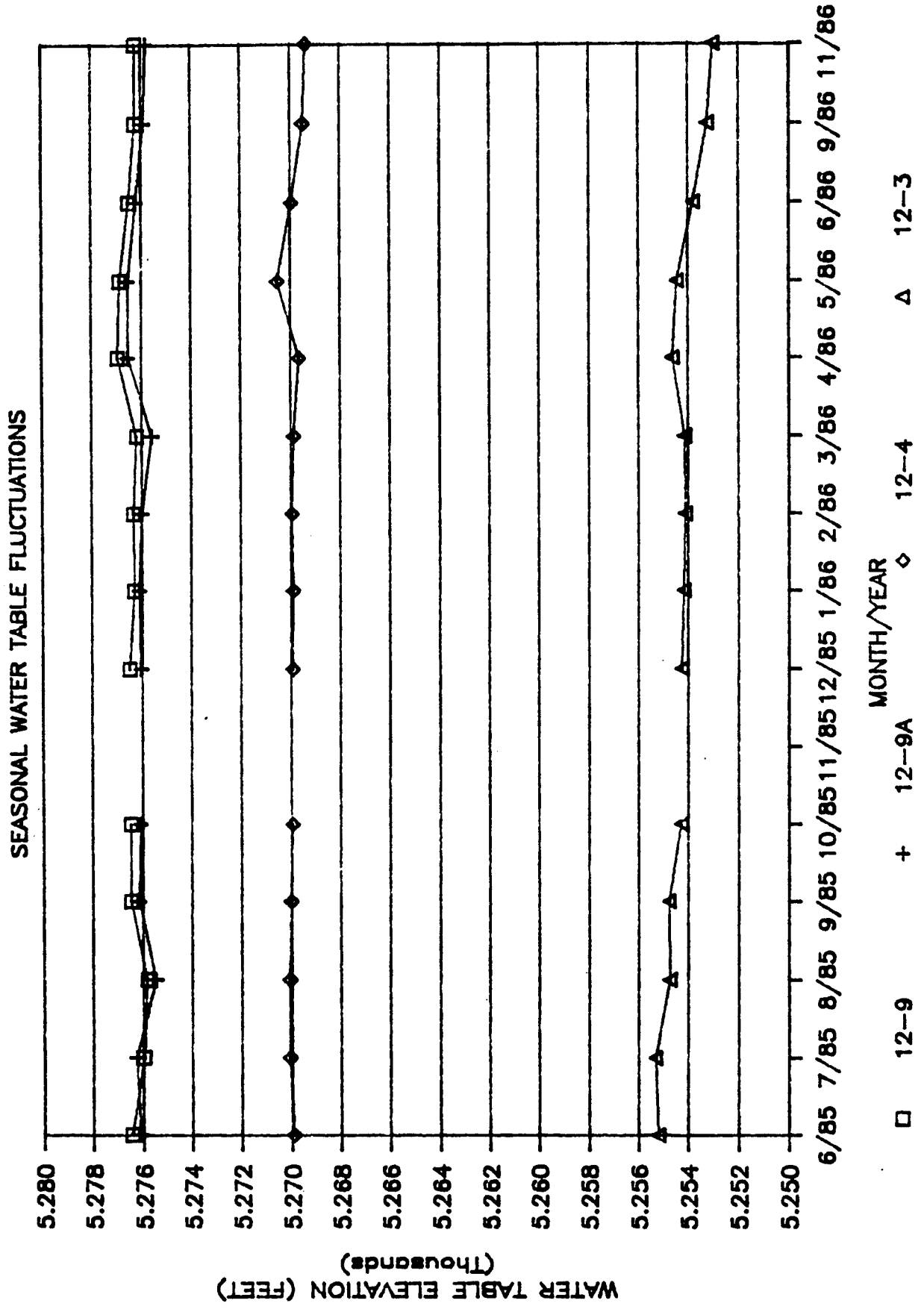
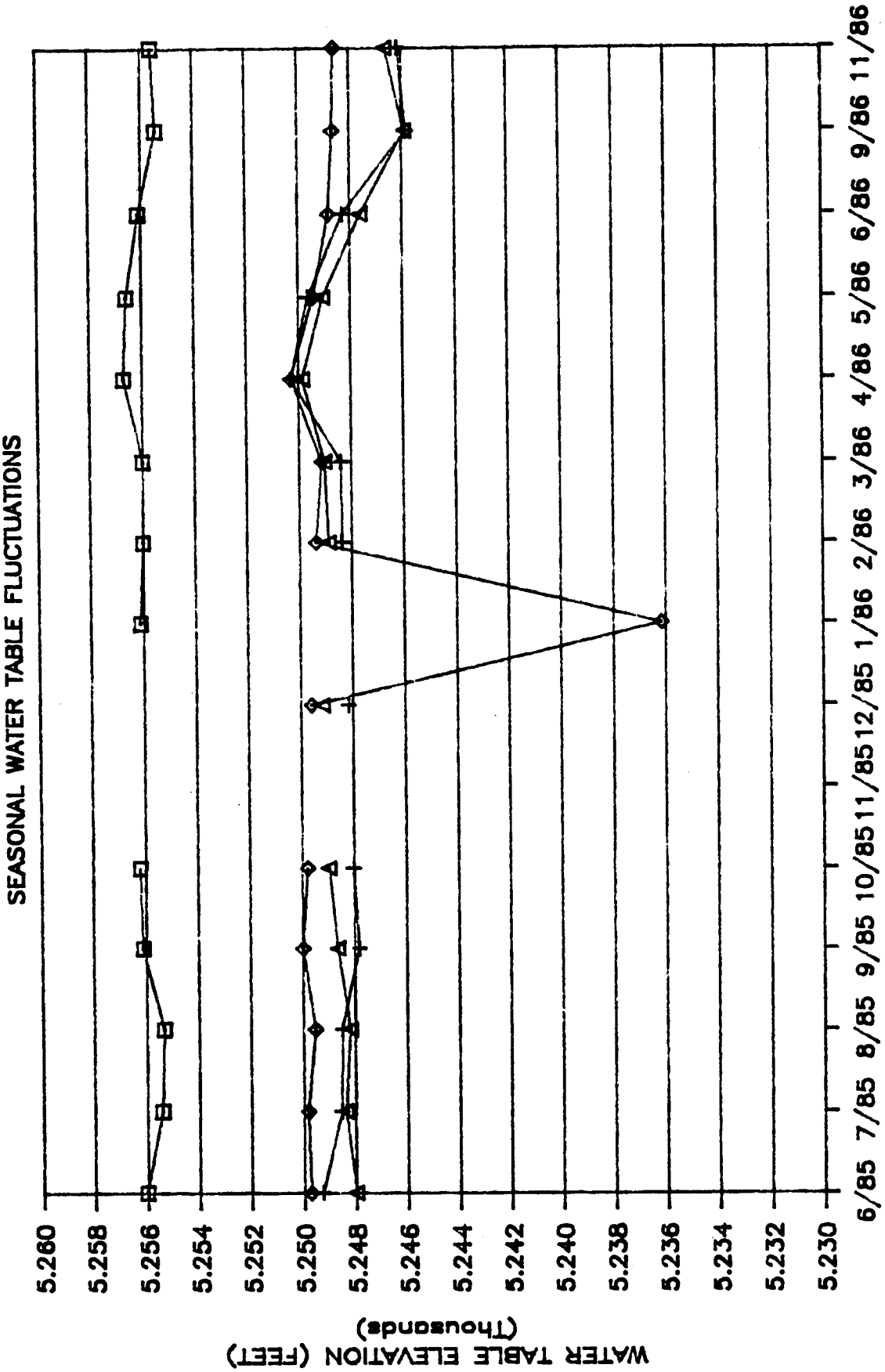

SEASONAL WATER TABLE FLUCTUATIONS
WATER TABLE ELEVATION (FEET)
(Thousands)
5.280
5.278
5.276
5.274
5.272
5.270
5.268
5.266
5.264
5.262
5.260
5.258
5.256
5.254
5.252
5.250
6/85 7/85 8/85 9/85 10/85 11/85 12/85 1/86 2/86 3/86 4/86 5/86 6/86 9/86 11/86
MONTH/YEAR
□ 12-9
+ 12-9A
◇ 12-4
Δ 12-3

Figure 15


SEASONAL WATER TABLE FLUCTUATIONS
WATER TABLE ELEVATION (FEET)
(Thousands)
5.260
5.258
5.256
5.254
5.252
5.250
5.248
5.246
5.244
5.242
5.240
5.238
5.236
5.234
5.232
5.230
6/85 7/85 8/85 9/85 10/85 11/85 12/85 1/86 2/86 3/86 4/86 5/86 6/86 9/86 11/86
MONTH/YEAR
SP-18
SP-10
SP-16
SP-7